Lab Activity: IRSA Finder Chart

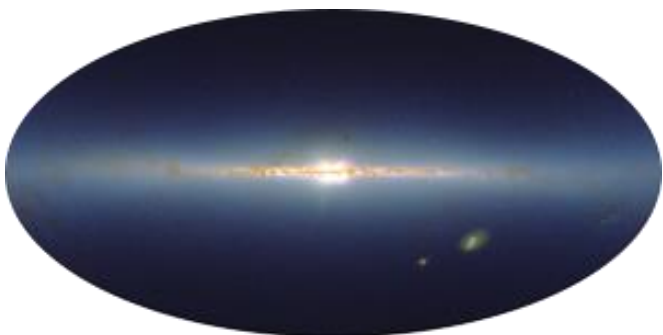**Background**: all information taken from https://irsa.ipac.caltech.edu/about.html

IRSA is chartered to curate the science products of NASA's infrared and submillimeter missions, including many large-area and all-sky surveys. In total, IRSA provides access to about a trillion astronomical measurements, including all-sky coverage in 24 bands. Approximately 10% of all refereed astronomical journal articles cite data sets curated by IRSA.

IRSA offers access to digital archives through powerful query engines (including VO-compliant interfaces) and offers unique data analysis and visualization tools. IRSA exploits a re-useable architecture to deploy cost-effective archives, including 2MASS, Spitzer, WISE, Planck, and a large number of highly-used contributed data products from a diverse set of astrophysics projects.
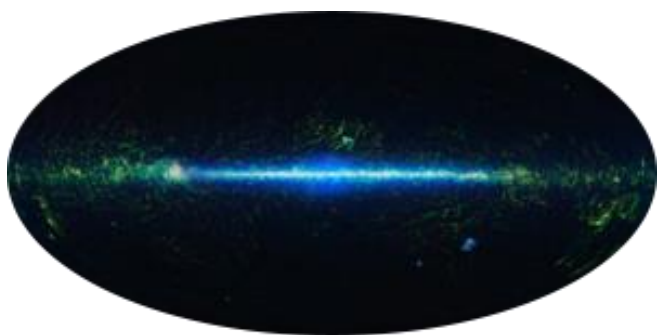
IRSA is one of several projects at the NASA Infrared Processing and Analysis Center (IPAC), located on the campus of the California Institute of Technology (Caltech). Read more about the history of IPAC here.

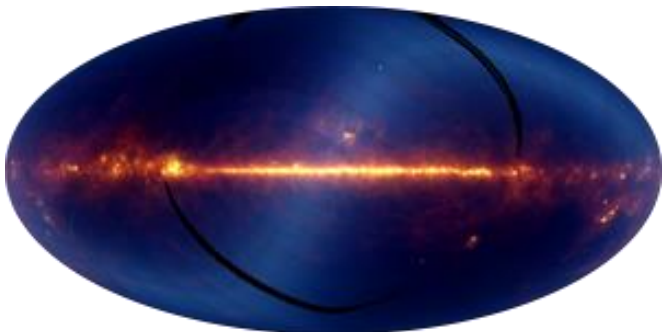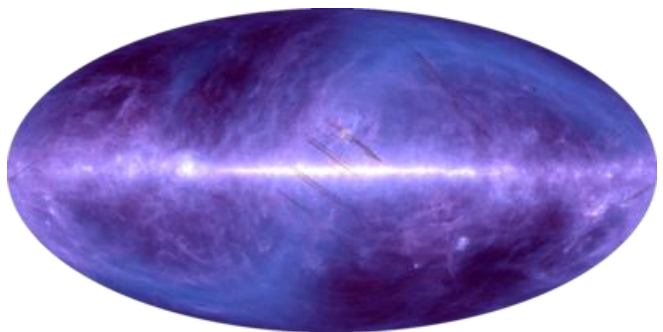**Spitzer**: 3.6, 4.5, 5.8, 8, 24, 70, 160 microns

2MASS: J, H, K
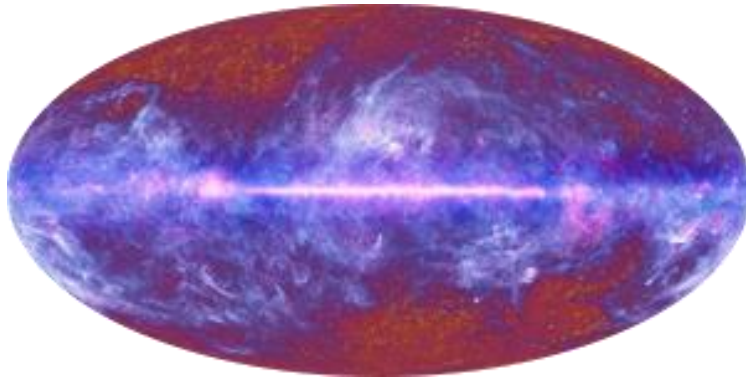

WISE: 3.4, 4.6, 12, 22 microns

IRAS: 12, 25, 60, 100 microns

AKARI: 65, 90, 140, 160 microns

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Planck: 30-857 GHz

PART 1: First let's take a closer look at some of these missions. In a few sentences I want you to research (Googling them is ok) and describe a little bit about each mission below. I want you to include things like is this a ground based mission or space mission? What specific wavelengths did this mission observe at? Is it an on-going mission or is it complete? Other facts pertaining to the mission are encouraged.

Spitzer:

2MASS:

WISE:

AKARI:

PART 2: Your goal is to use an IRSA tool (specifically IRSA Finder Chart) to get images of specific objects in IR wavelengths
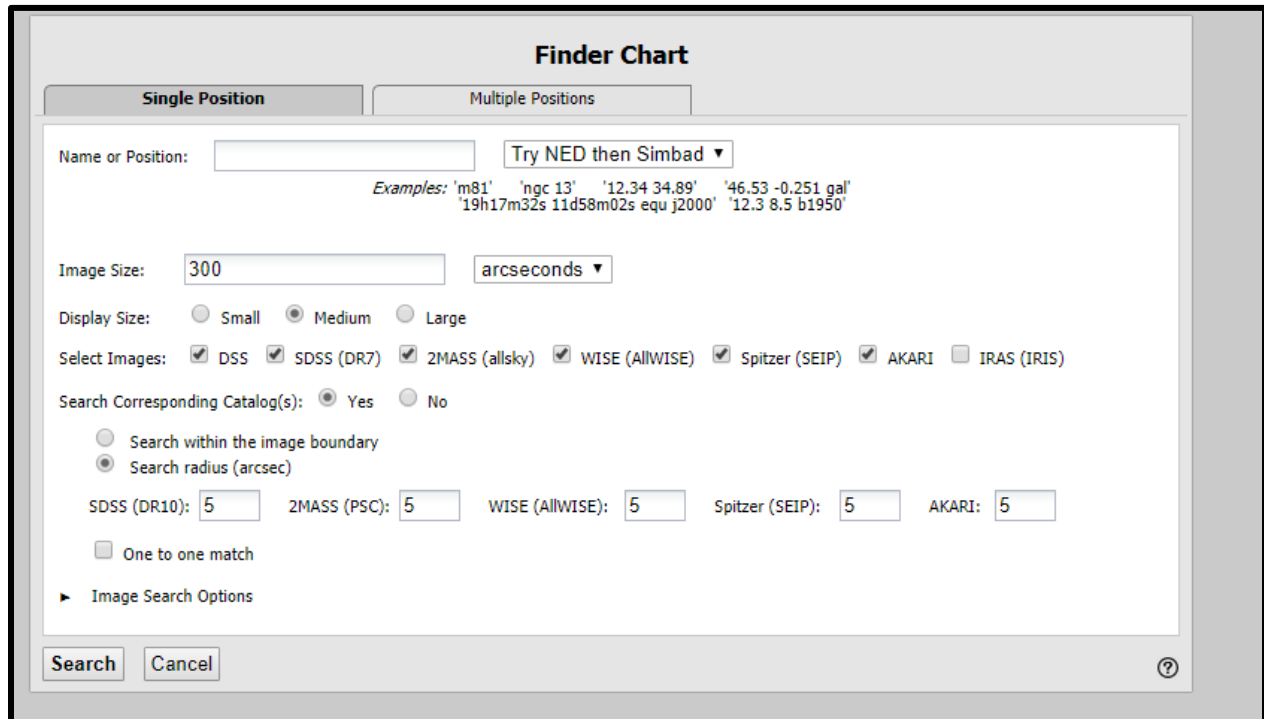
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Instructions for finding images using IRSA Finder Chart:

1. Navigate to the following website:
    https://irsa.ipac.caltech.edu/applications/finderchart/

    You should see this:

2. For some objects you can just type the name and it will automatically find it. Try this first. If this doesn't work you can always type in the Right Ascension and Declination coordinates for the object as well but it must be in the following form:

    Example: Betelgeuse RA and Dec is 5h55m10.26s 7d24m26s Notice the space between the RA and Dec.

    I have provided all of the RA and Dec for the stars you need to find so you should be able to copy and paste them in to Finder Chart.

3. You can adjust the image size as needed the default is 300 arcseconds which will probably work for most objects but play with this as needed.
4. All the other settings the defaults should be just fine so you shouldn't need to change anything else.
5. Hit search when complete you should see something like the following for Betelgeuse. You will have to scroll on the right side to see all of the images but you can make the images full screen by clicking the box in the upper right corner of the image screen.

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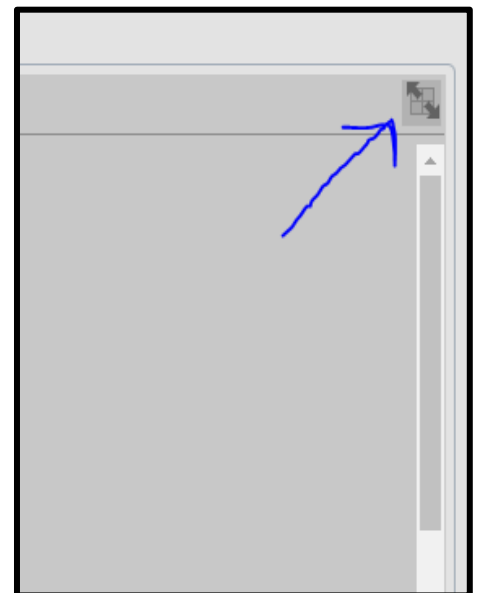
Background: all information taken from https://irsa.ipac.caltech.edu/about.html
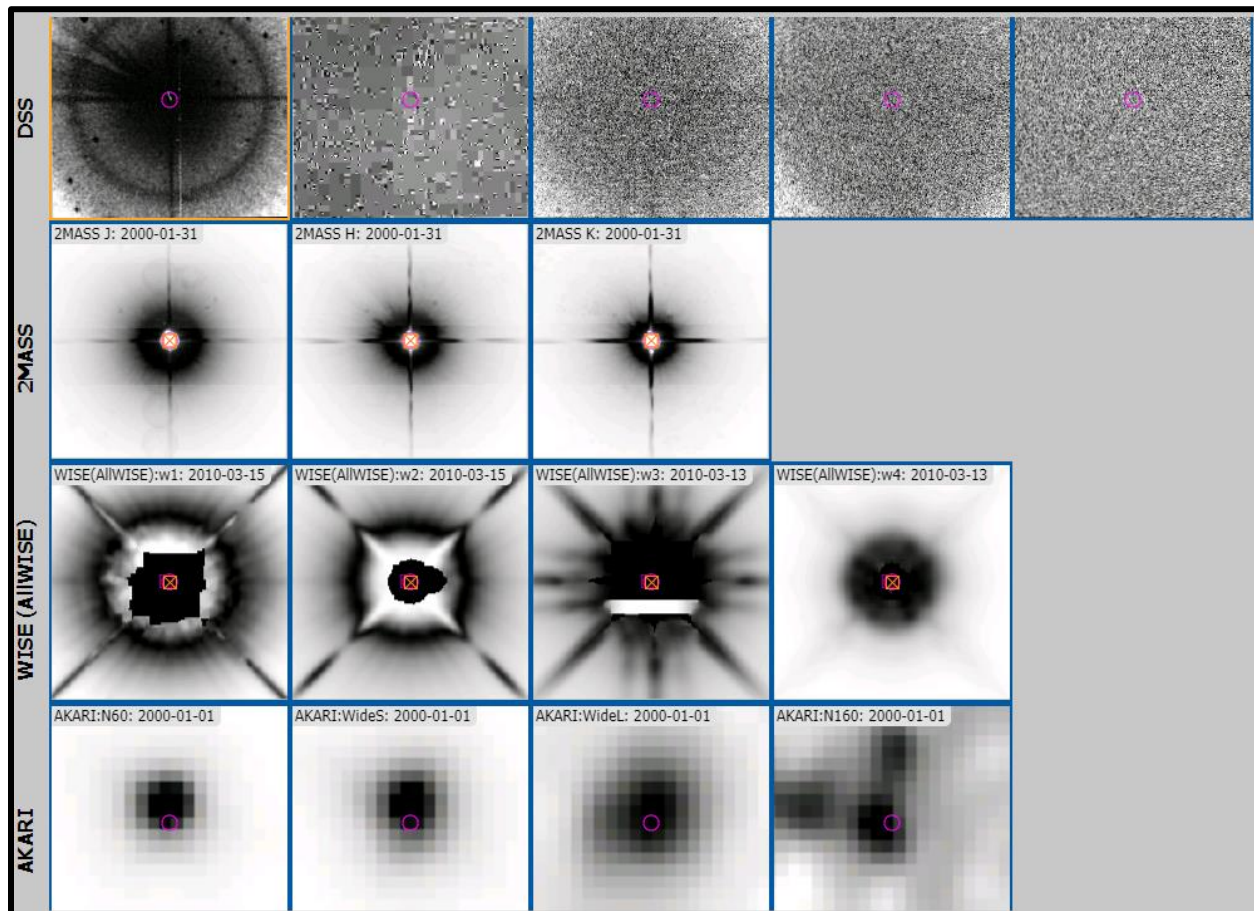
What you are seeing are images taken from the astronomical instrument (on the left) at specific IR wavelengths (or bands).

Note: If you look carefully at some of the images you might notice that you can start to see actual pixels in some of them (AKARI). This is due to the resolution capabilities of the instrument. Spitzer has a much higher resolution then AKARI did.

Your turn: Use IRSA Finder Chart to get images for the following stars. Once you get the images screenshot and paste them into your lab report. Make sure to label what the image is of.

1. **Sirius** RA Dec 6h45m9s -16d42m58s
2. **Rigel** RA Dec 5h14m32.3s -8d12m6s
3. **Betelgeuse** RA Dec 5h55m10.26s 7d24m26s
4. **Procyon** RA Dec 7h39m18s 5d13m30s
5. **Vega** RA Dec 18h36m56s 38d47m1s
6. **Castor** RA Dec 7h34m36.0s 31d53m18s
7. **Pollux** RA Dec 7h45m19s 28d1m34s
8. **Deneb** RA Dec 20h41m26s 45d16m49s
9. **Regulus** RA Dec 10h8m22.3s 11d58m2s
10. **Capella** RA Dec 5h16m41s 45d59m53s
11. **Aldebaran** RA Dec 4h35m55s 16d30m33s